

REMARKS

SECTION 101 REJECTION OF CLAIM 1

In rejecting claim 1, the Examiner asserts that each and every limitation of claim 1 can be found in *Zuluaga*.¹

As best understood, the Examiner regards claim 1's "elongated housing" as corresponding to *Zuluaga*'s rotary mount 160 in FIG. 10. Claim 1's "first and second reflective surfaces" would then be *Zuluaga*'s wedge prisms 142, 144. Claim 1's "delivery fiber" and "collection fiber" would then correspond to the *Zuluaga*'s delivery fiber 136 and collection fiber 146 respectively.

The cited structure is not a catheter tip apparatus

As a threshold matter, the preamble recites "[a] catheter tip apparatus."

The structure shown in FIG. 10 is nowhere near the catheter tip. As a result, it cannot reasonably be regarded as a catheter tip. This is apparent from inspection of *Zuluaga* FIG. 2.

Zuluaga FIG. 2 shows a schematic view of the entire catheter. The structure shown in FIG. 10 corresponds to the rotating optical coupler 60 in FIG. 2. This is apparent from comparing the relationship between the light source 12 in FIG. 2 and the light source 130 in FIG. 10, as well as between the detector 50 in FIG. 2 and the signal detector 148 in FIG. 10.

Applicant recognizes that the preamble is not always entitled to patentable weight. However, this is generally the case where the language relied upon in the preamble merely recites an intended use.² In those other cases, in which the words relied upon are words that actually limit the structure of the claimed invention, the preamble must be treated as a claim limitation.³

¹ *Zuluaga*, US2002/0183622, filed May 31, 2001.

² *Pitney Bowes v. HP*, 182 F.3d 1298 (CAFC 1999).

³ *Corning Glass Works v. Sumitomo*, 868 F.2d 1251 (CAFC 1989).

One of ordinary skill in the art would clearly understand a catheter base to be different from a catheter tip. Therefore, the term “catheter tip apparatus” must be regarded as a structural limitation, since it excludes any catheter base apparatus.

The term “catheter tip apparatus” cannot be regarded as a statement of intended use because the use of a structure at a catheter tip places constraints on that structure. For example, a catheter tip apparatus would have to fit into a blood vessel. No such requirement exists for a structure intended for use in the catheter base.

The structure shown in *Zuluaga*’s FIG. 10 is a catheter base apparatus, not a catheter tip apparatus. It is therefore irrelevant to the claimed subject matter.

Housing is not supported on “flexible catheter sheath”

Claim 1 requires that the elongated housing be “rotatably supported on a flexible catheter sheath.”

The alleged “elongated housing,” *Zuluaga*’s rotary mount 160, is not in any way supported by a flexible catheter sheath as required by the plain language of the claim.

A proper rejection under section 102 requires that each and every claim limitation be disclosed in the allegedly anticipating reference. In this case, the cited art fails to disclose the limitation of “an elongated housing *rotatably supported on a flexible catheter sheath*.” Therefore, the section 102 rejection is improper.

Fibers’ distal ends are not adjacent to a reflective surface

According to claim 1, the delivery fiber must have “a distal end adjacent to” a reflective surface. Similarly, the collection fiber must have “a distal end adjacent to” a reflective surface.

In *Zuluaga*, the distal ends of the collection and delivery fibers 136, 146 are nowhere near either one of the alleged reflective surfaces 142, 144. As shown in FIG. 2, the distal ends of those fibers are at the opposite end of the catheter from that shown in FIG. 10.

Moreover, even if one were to regard the distal ends as being the ends shown in FIG. 10, those ends are in completely different structures and cannot reasonably be regarded as in any way “adjacent” to each other.

A proper rejection under section 102 requires that each and every limitation be disclosed in a single reference. In the present case, the cited art clearly fails to disclose fibers having their distal ends *adjacent to* reflective surfaces as required by the claim. Therefore, the section 102 rejection is improper.

Wedge prisms are not “reflective surfaces”

The Examiner appears to regard the wedge prisms **142, 144** as corresponding to claim 1’s “first and second reflective surfaces.”

The wedge prisms are indeed supported by the housing. And, as the Examiner correctly observes, they are spaced apart longitudinally. But they are, nevertheless, wedge *prisms*. They are *not* mirrors or anything equivalent to mirrors in structure or function. These wedge prisms function by *refracting* light, not *reflecting* it. Therefore, they cannot reasonably be regarded as “reflective surfaces” as required by claim 1.

Applicant recognizes that the Examiner may apply, to words in a claim, the broadest reasonable interpretation consistent with how one of ordinary skill in the art would interpret those words. But one of ordinary skill in the art would clearly regard refraction and reflection as fundamentally different optical processes. Thus, it would be unreasonable to expect one of ordinary skill in the art to regard “*reflective surface*” as including a structure that functions by refraction, such as a wedge prism.

Summary

It is apparent that the section 102 rejection of claim 1 is improper for at least three reasons:

- *Zuluaga's* FIG. 10 does not show a catheter *tip* apparatus;

- *Zuluaga's* housing **160** is not supported on a flexible catheter sheath; and
- The distal ends of *Zuluaga's* delivery and collection fibers are nowhere near adjacent to the reflective surfaces **142, 144**.
- The alleged reflective surfaces **142, 144** are wedge prisms that function primarily to refract, not reflect.

A section 102 rejection requires that each and every claim limitation be found in a single reference. *Zuluaga* fails to disclose at least each of the foregoing elements. Accordingly, Applicant requests withdrawal of the section 102 rejection of claim 1 and all claims dependent thereon.

SECTION 102 REJECTION OF CLAIM 20

Claim 20 recites limitations similar to claim 1 and is patentable for at least the same reasons as claim 1.

However, claim 20 also includes the limitation that the first and second reflective surfaces be “in axial alignment.”

The Examiner appears to regard wedge prisms **142, 144** as being the reflective surfaces recited in the claim. But wedge prisms **142** and **144** are plainly not in axial alignment.

All claims dependent on claim 20 include the limitations of claim 20 and are therefore patentable for at least the same reasons.

SECTION 102 REJECTION OF CLAIM 39

Claim 39 includes limitations similar to claim 1 and is patentable for at least the same reasons.

In addition to the reasons discussed in connection with claim 1, claim 39 requires that the “elongated housing” be “optically-transparent” and “sheath-enclosed.” There is no indication that rotary mount **160** is either optically-transparent” or “sheath-enclosed.”

Furthermore, claim 39 requires that the two reflectors be in axial alignment. This is not the case in *Zuluaga*. The wedge prisms in FIG. 10 are not in axial alignment with each other.

Claim 40 includes the limitations of claim 39 and is patentable for at least the same reasons.

SECTION 102 REJECTION OF CLAIM 49 AND 50

Claims 49 and 50 include limitations similar to claim 1 and are patentable for at least the same reasons.

SECTION 103 REJECTION OF CLAIM 22

Claim 22 recites the additional limitation that the first reflective surface comprise a curvilinear portion.

The Examiner dismisses this limitation by noting that “the specific type of reflective surface used would have been an obvious design choice of known functional equivalents in the art.”

Zuluaga shows wedge prisms having apparently planar surfaces. One of ordinary skill in the art would have recognized that a curvilinear surface has optical properties that differ from those of a planar surface. Therefore, one of ordinary skill in the art would not have regarded a curvilinear surface as being a “known functional equivalent” to a planar surface.

A proper section 103 rejection requires that the Examiner provide some plausible chain of reasoning for why one would modify *Zuluaga*’s planar wedge prism to have curvilinear portions as recited in the claim. In the absence of such a chain of reasoning, the section 103 rejection is improper and should be withdrawn.

SECTION 103 REJECTION OF CLAIM 26

The Examiner concedes that *Zuluaga* fails to teach an index matching fluid arranged between a distal end of a fiber and a reflective surface. However, the Examiner proposes that one

of ordinary skill in the art would have modified it because index matching “is an old and well known expedient.”

As a threshold matter, the mere fact that index matching is an “expedient” is insufficient. One of ordinary skill in the art would have known many other “expedients” in addition to index matching. The Examiner fails to explain why out of all those expedients, and without the benefit of Applicant’s claim as a road map, one of ordinary skill in the art would have selected that particular expedient.

Moreover, it is unclear how *Zuluaga*’s structure could even be modified as proposed. After all, in *Zuluaga*, the fibers **135, 146** and the wedge prisms **142, 144** are in completely different chambers. These chambers are separated by free space. It is therefore physically impossible to arrange any index matching fluid at all between the distal end of a fiber and the wedge prisms.

In view of the foregoing, Applicant requests reconsideration and withdrawal of the section 103 rejection of claim 26.

SECTION 112 REJECTION OF CLAIM 41

Applicant amends the claim to address the section 112 rejection. In view of the amendment, Applicant requests reconsideration and withdrawal of the section 112 rejection of claim 41 and all claims dependent thereon.

CLAIM OBJECTIONS

Applicant amends the claims to address the Examiner’s objections.

CLAIMS NOT ADDRESSED

Applicant notes that claims 7-8 and 10-12 are not mentioned in the Office Action. Applicant requests clarification of the status of these claims.

Applicant : Simon M. Furnish
Serial No. : 10/037,306
Filed : December 31, 2001
Page : 17 of 17

Attorney's Docket No.: 12258-032001 / InfraReDx-14

CONCLUSION

Now pending in this application are claims 1-43, 45-51, of which claims 1, 20, 33, 39, 41, 49 and 51 are independent. Please apply the two-month extension of time fee and any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 12258-032001.

Respectfully submitted,

Date: Jan. 28, 2008



Faustino A. Lichauco
Reg. No. 41,942

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906